



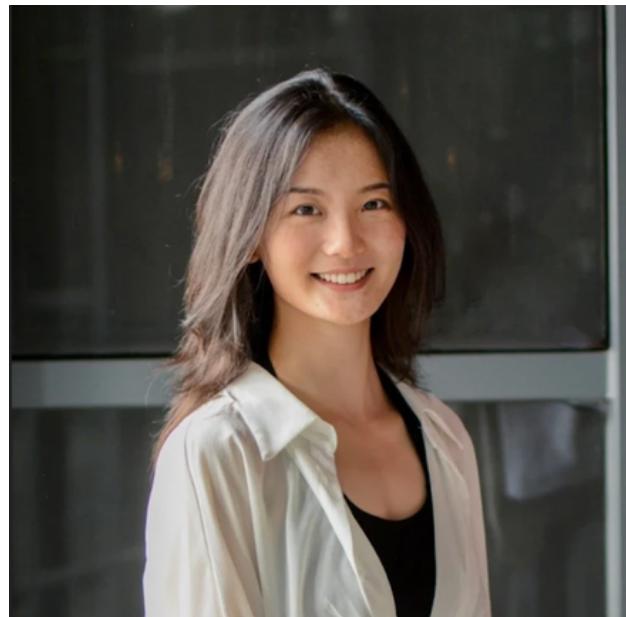
Time Series  
Forecasting

# Forecasting Food Price Impact on Consumers

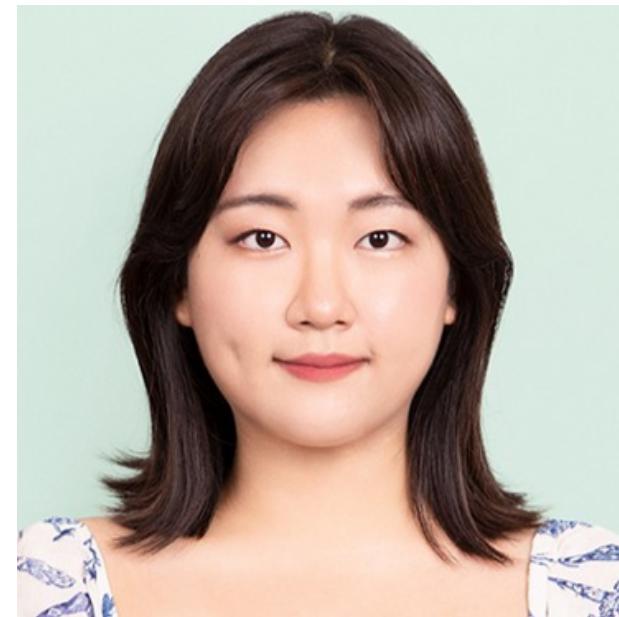
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Forecasting Food Price Impact on Consumers

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Forecasting Food Price Impact on Consumers

# Part 1: Introduction



## Consumer Price Index (CPI)

[kən-'sü-mər 'prīs 'in-,deks]

An index that measures the monthly change in prices paid by U.S. consumers.

 Investopedia

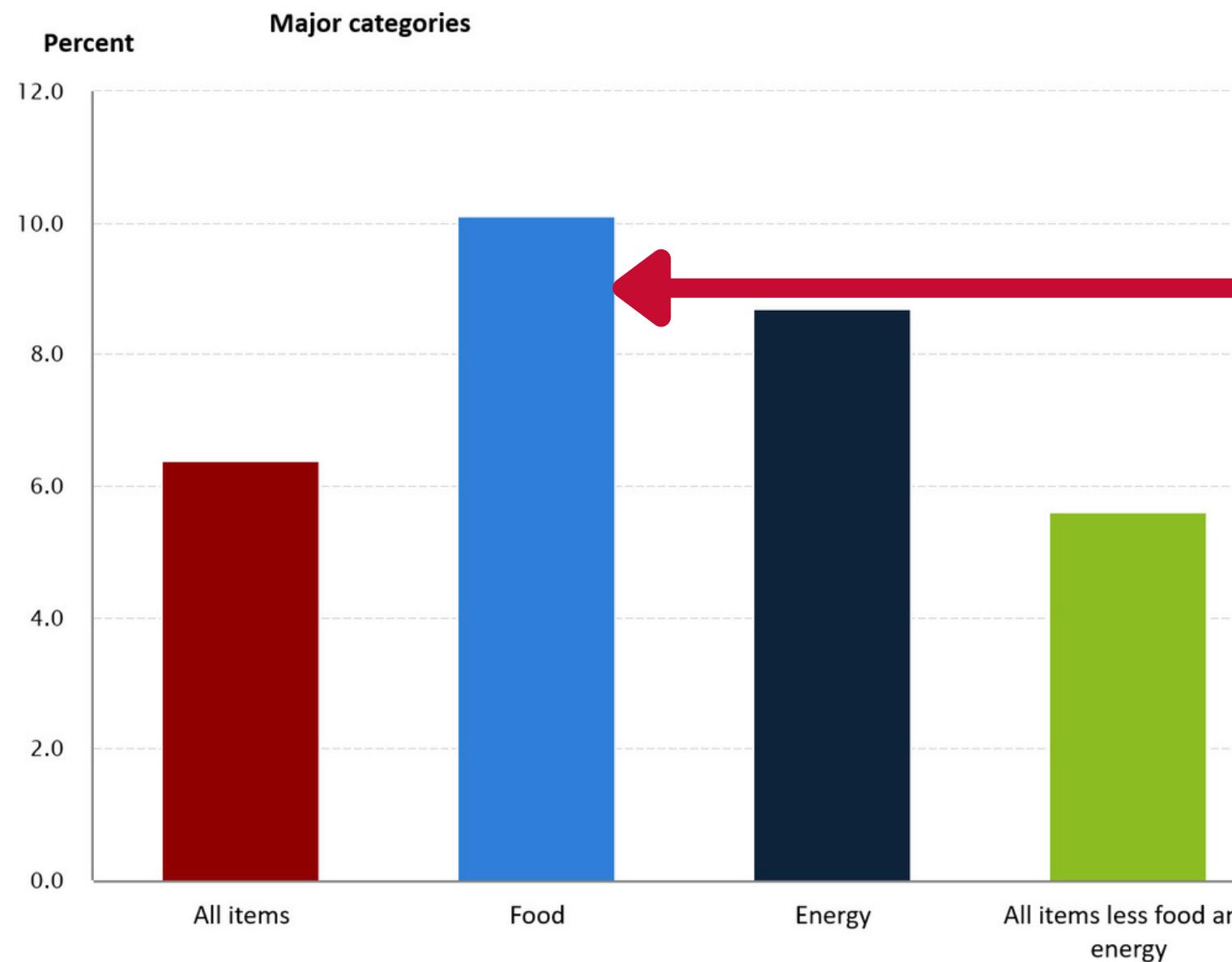
**INFLATION** **INFLATION** **INFLATION**

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# CPI Increases FPI Increases CPI

12-month percentage change, Consumer Price Index, selected categories, January 2023, not seasonally adjusted

Click on columns to drill down



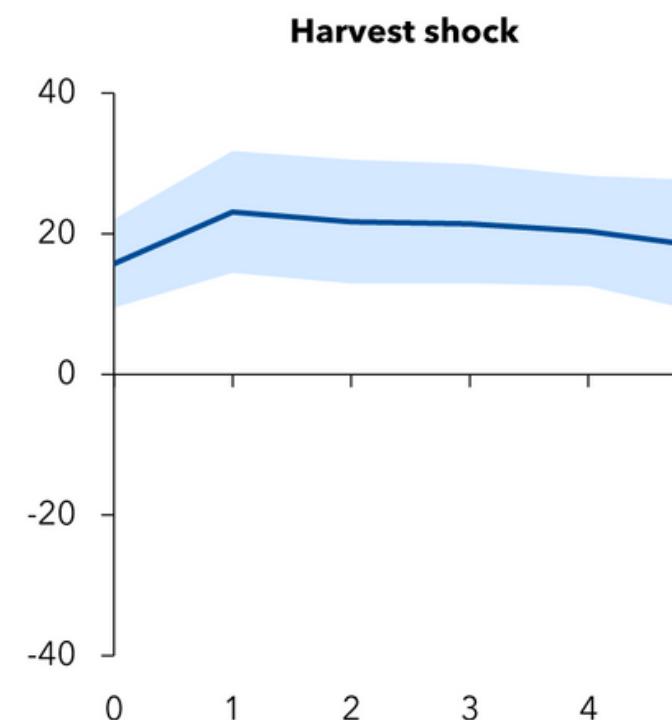
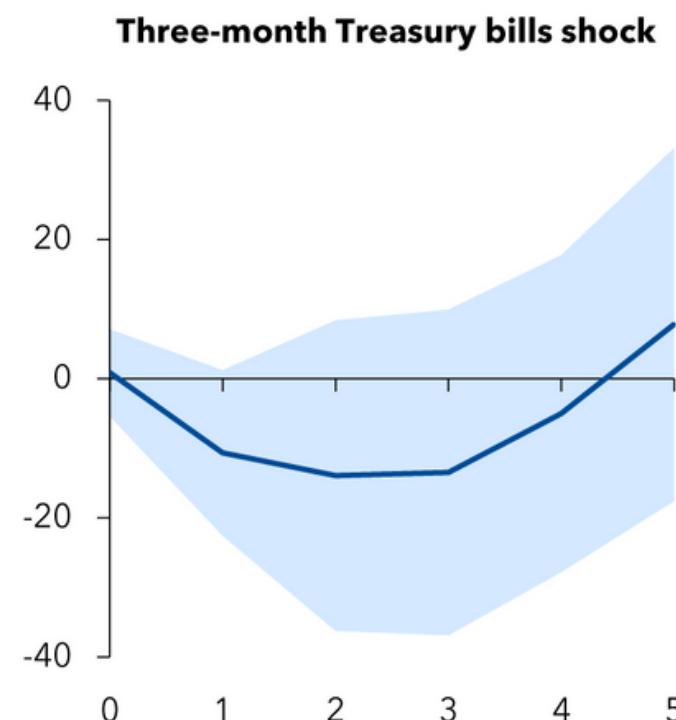
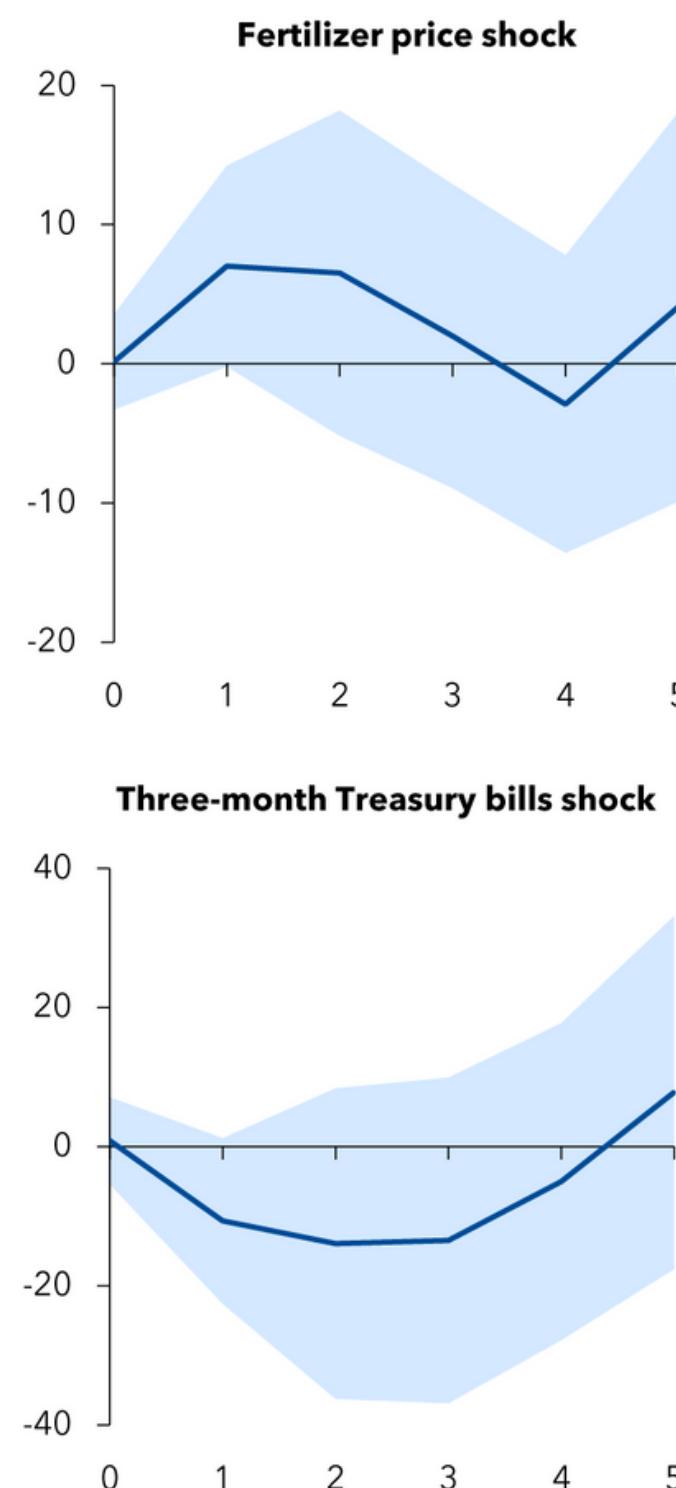
Source: U.S. Bureau of Labor Statistics.



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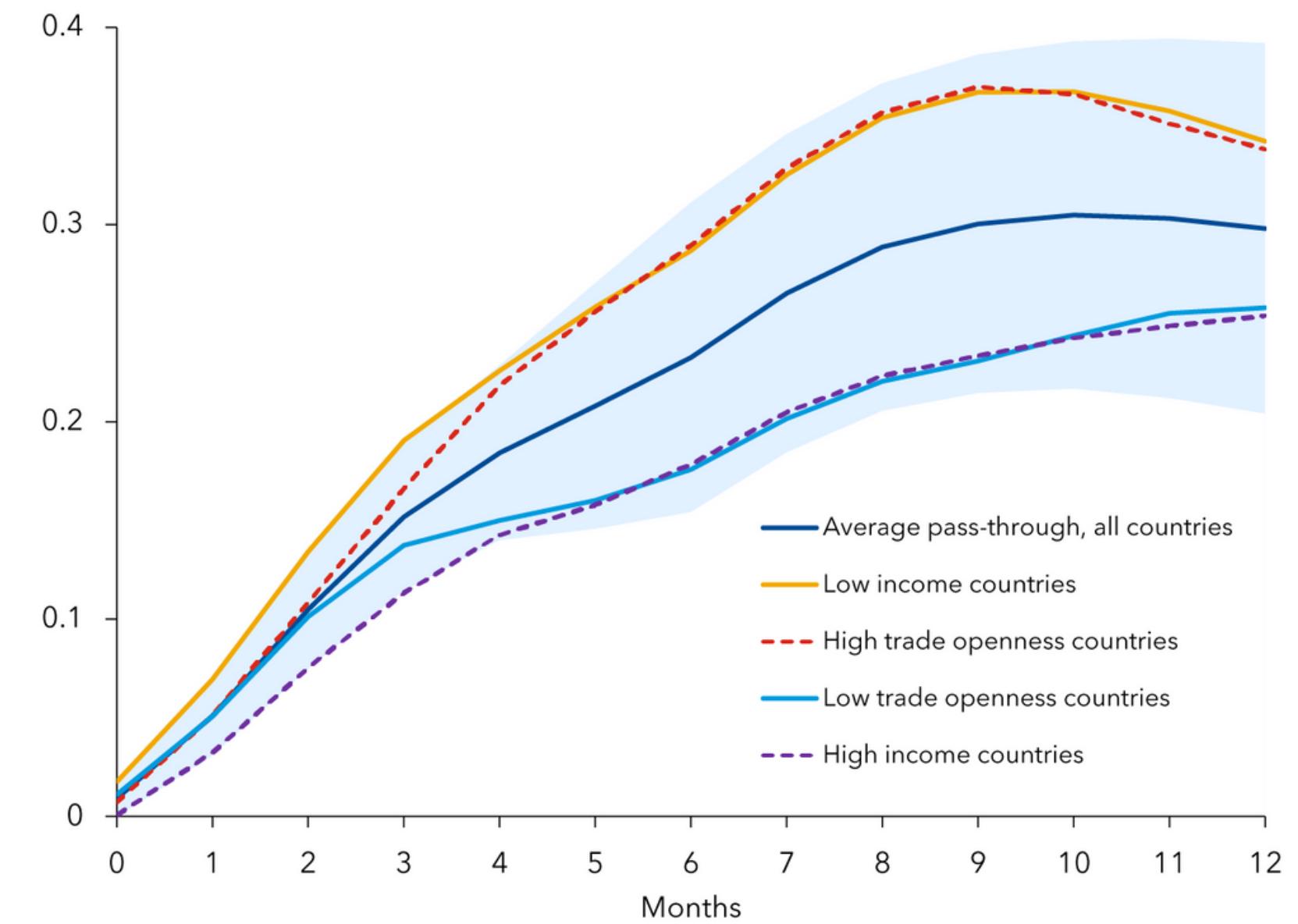
## Food drivers

Weather, oil prices and US interest-rate hikes drive food prices.  
(cumulative percent; quarters after shock)



## Price shock passthrough

It can take up to a year for changes in international food prices to pass through to domestic retail food prices.  
(percent)



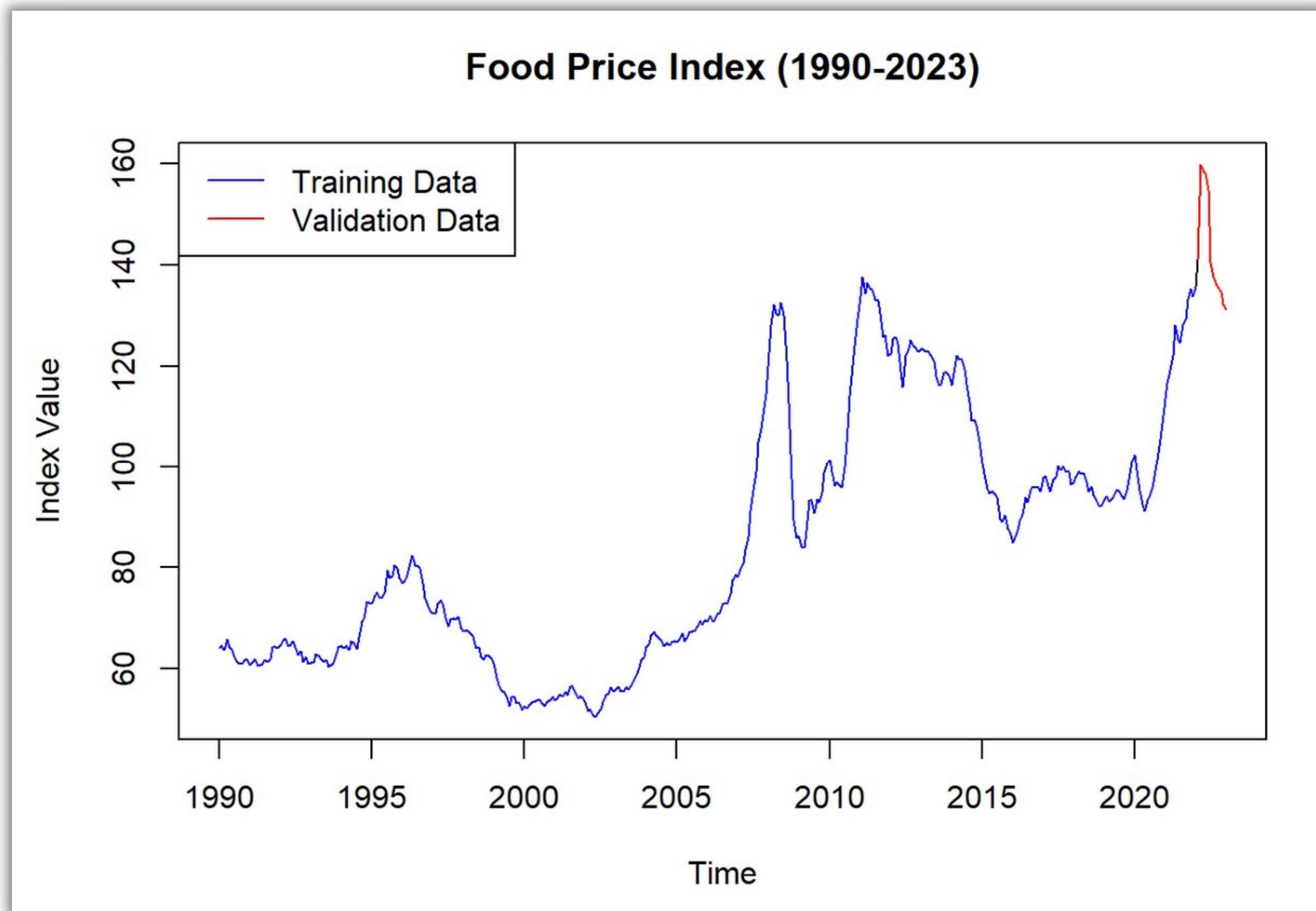
Source: Haver Analytics, World Bank, and IMF staff estimates.

Note: Response of domestic food CPI to a 1 percentage point shock to international food prices. Shaded areas are 90 percent confidence intervals.

**IMF**

Forecasting Food Price Impact on Consumers

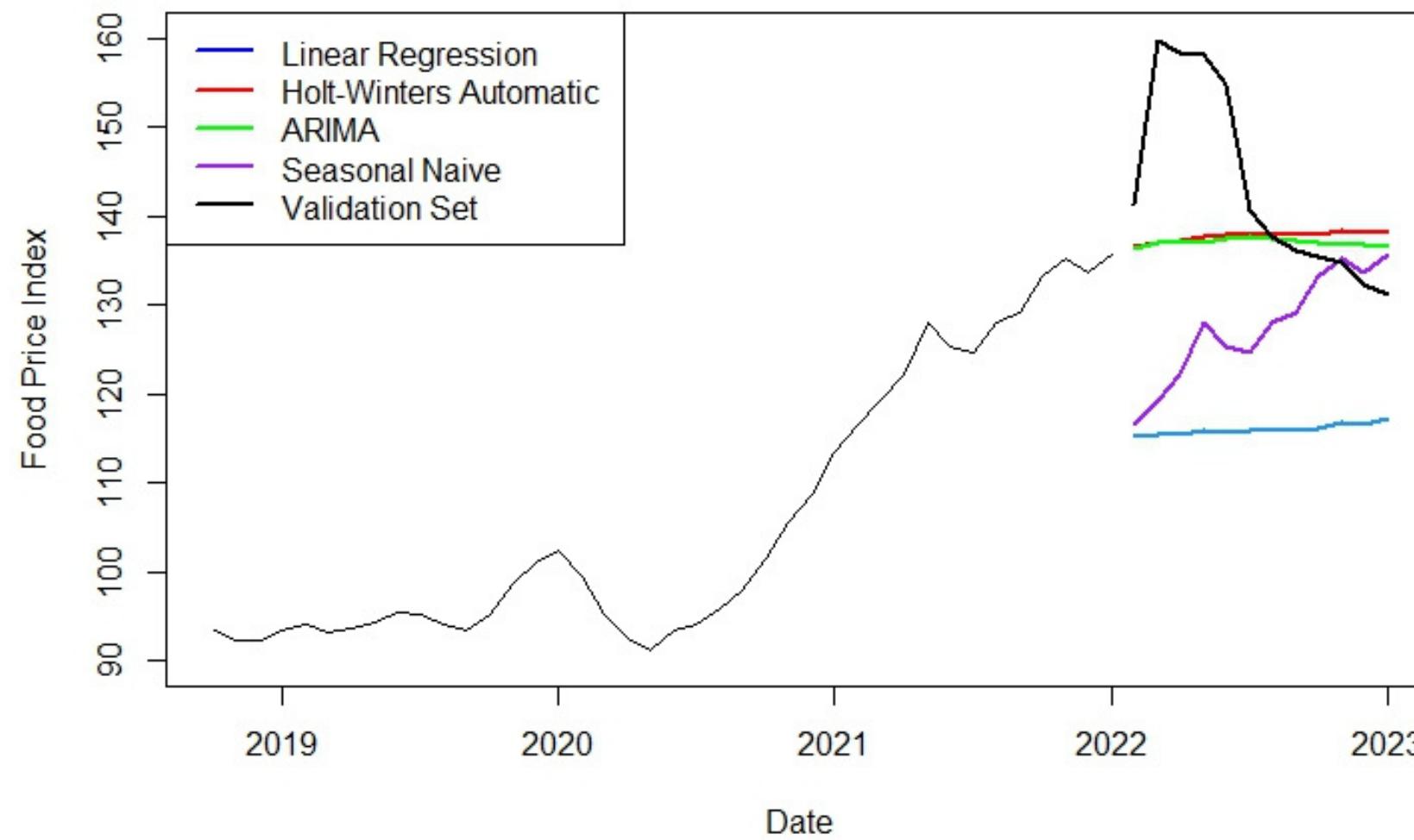
# Food Price Index has fluctuated over time, with periods of both growth and decline, with a NET INCREASE overtime



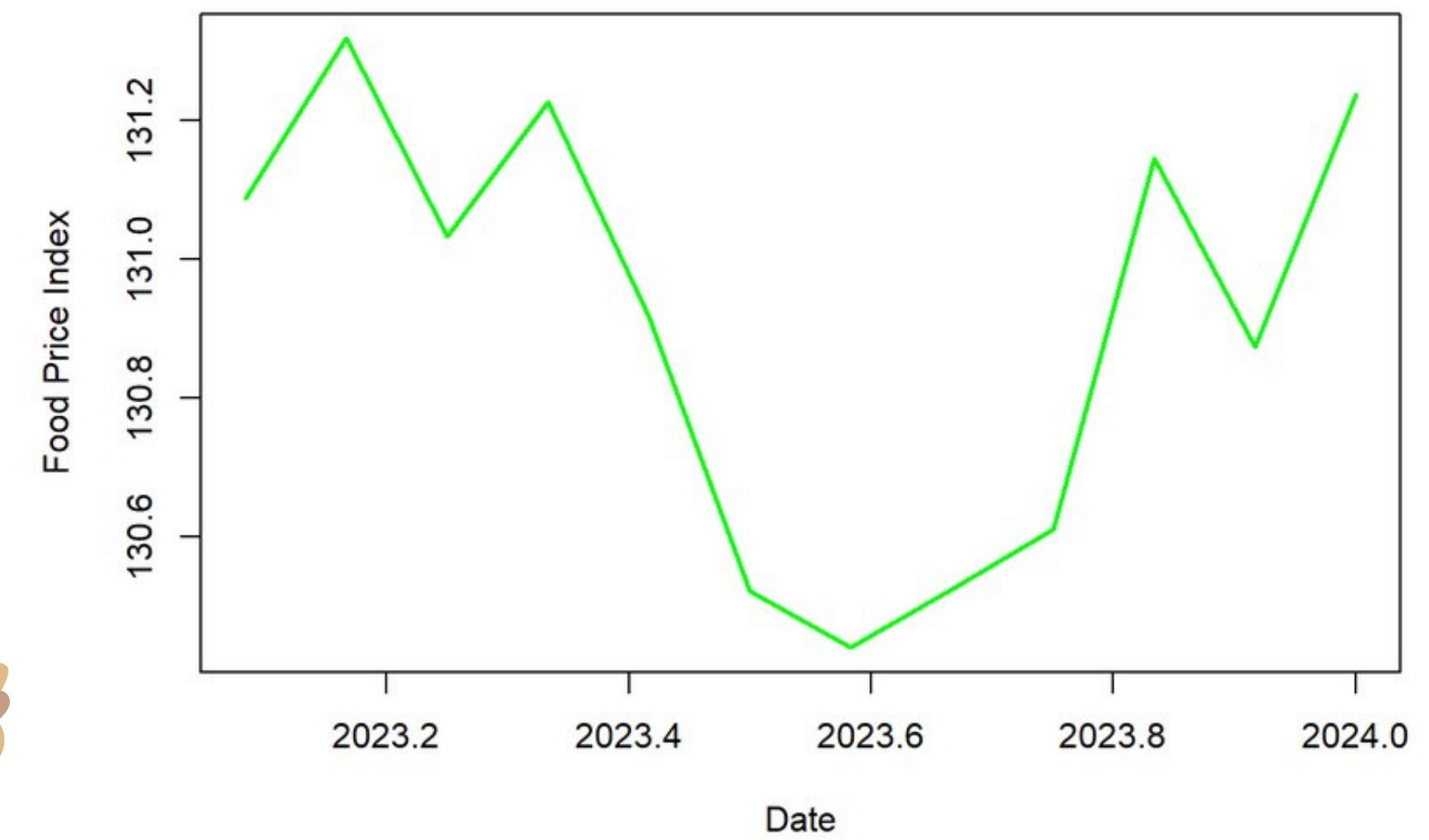
The FPI is calculated as the trade-weighted average of the prices of food commodities spanning the key agricultural markets for cereals, vegetable oils, sugar, meat and dairy products.

These commodities represent about 40 percent of gross agricultural food commodity trade (FAOSTAT), they are chosen for their high and strategic importance in global food security and trade.

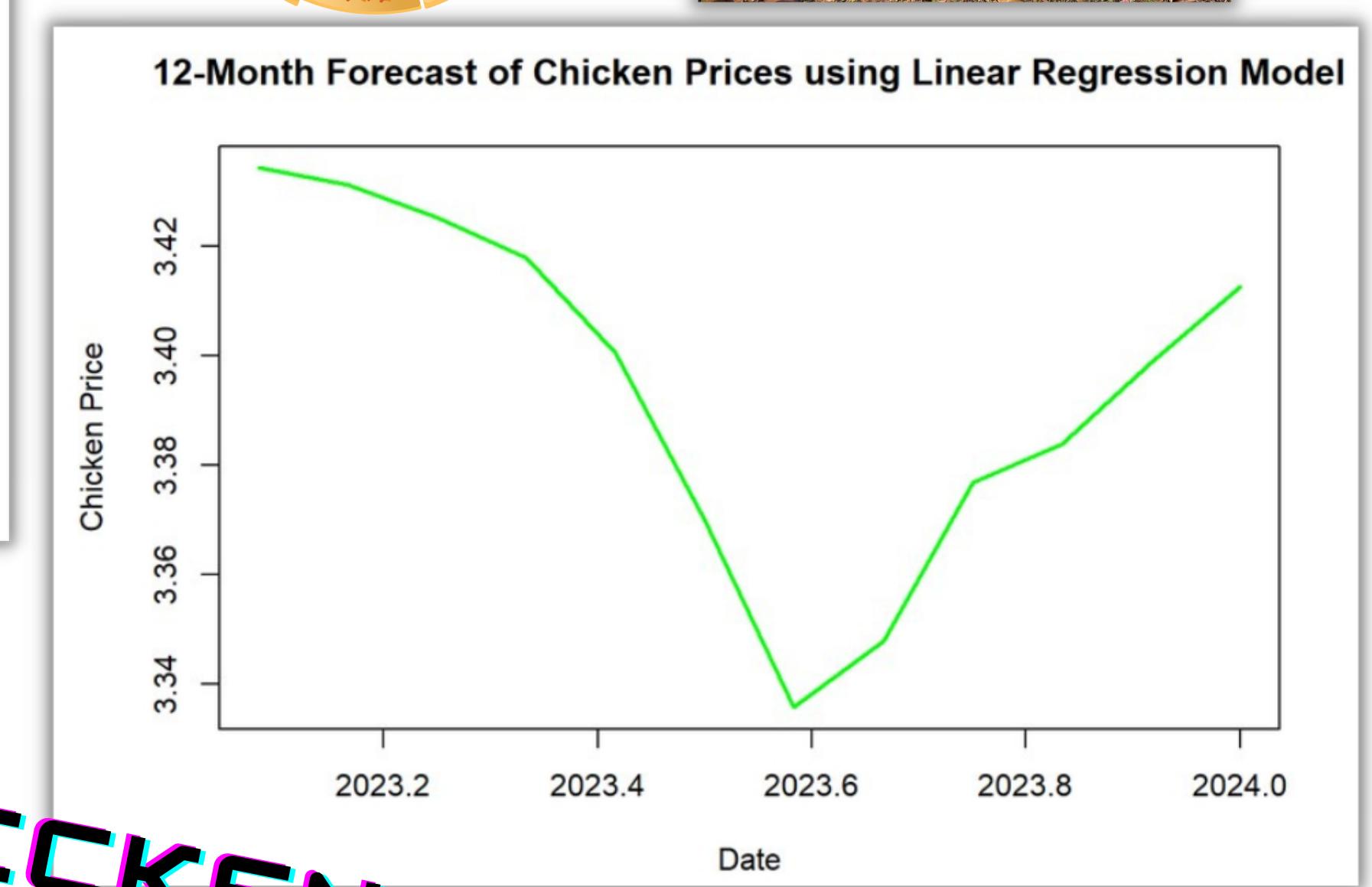
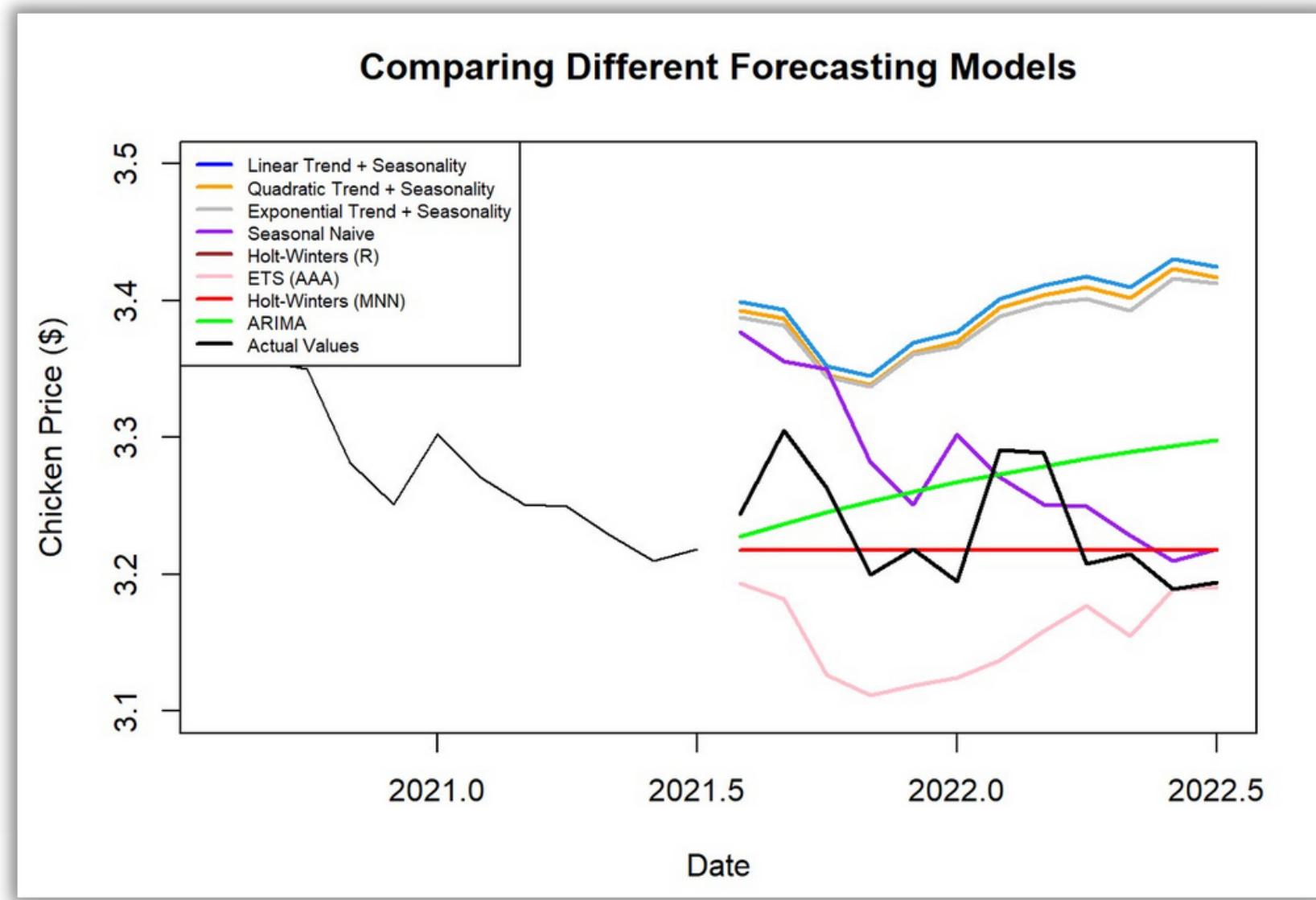
### Comparison of Forecasted Food Prices from Different Models



### 12-Month Forecast of Food Prices using ARIMA Model

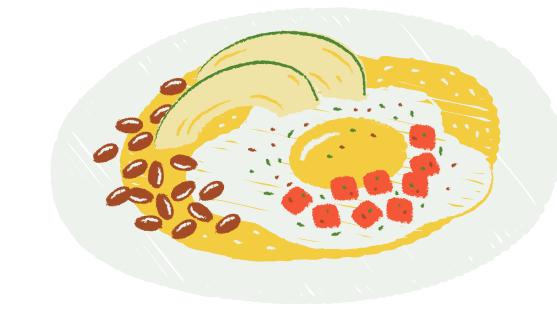
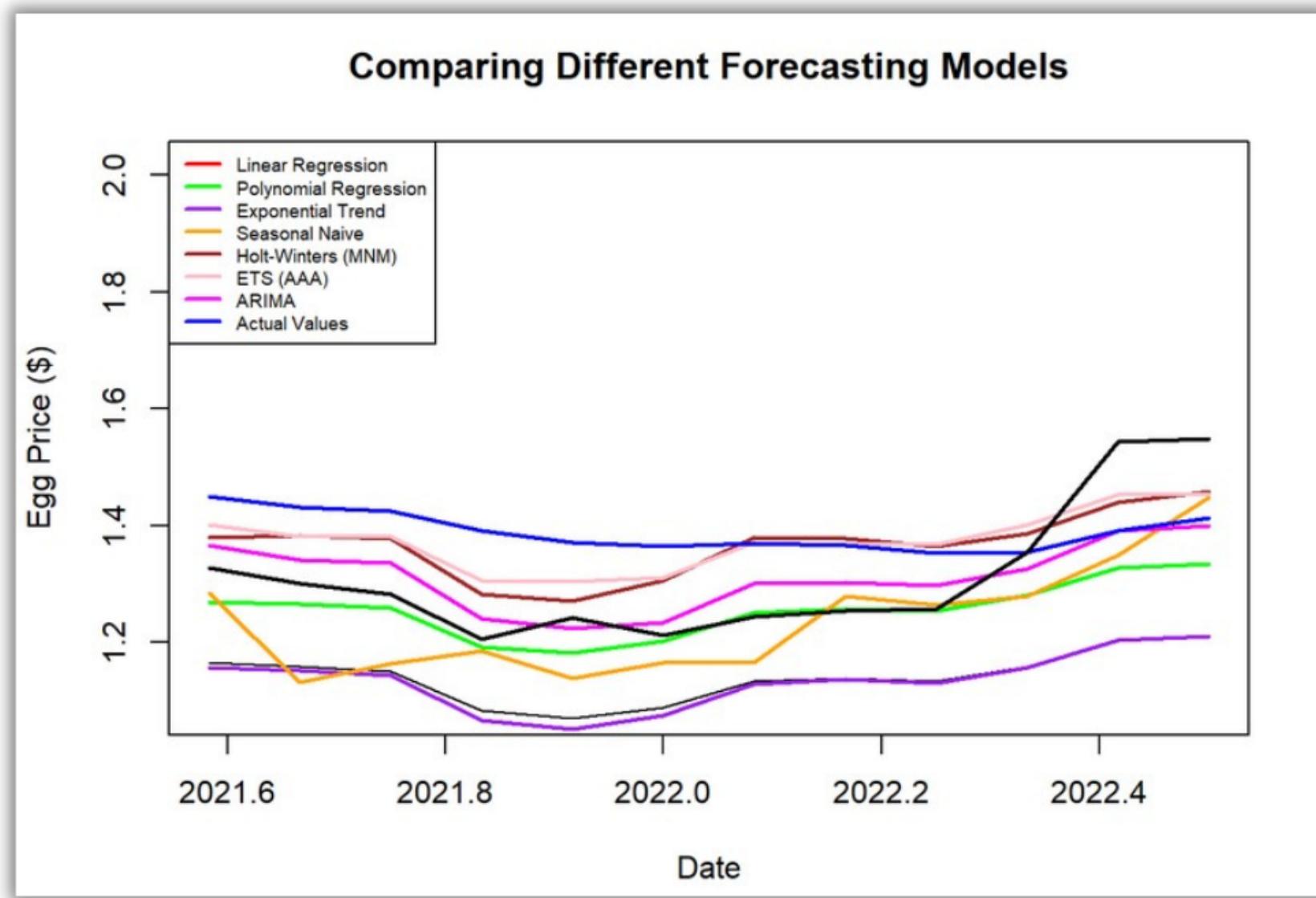


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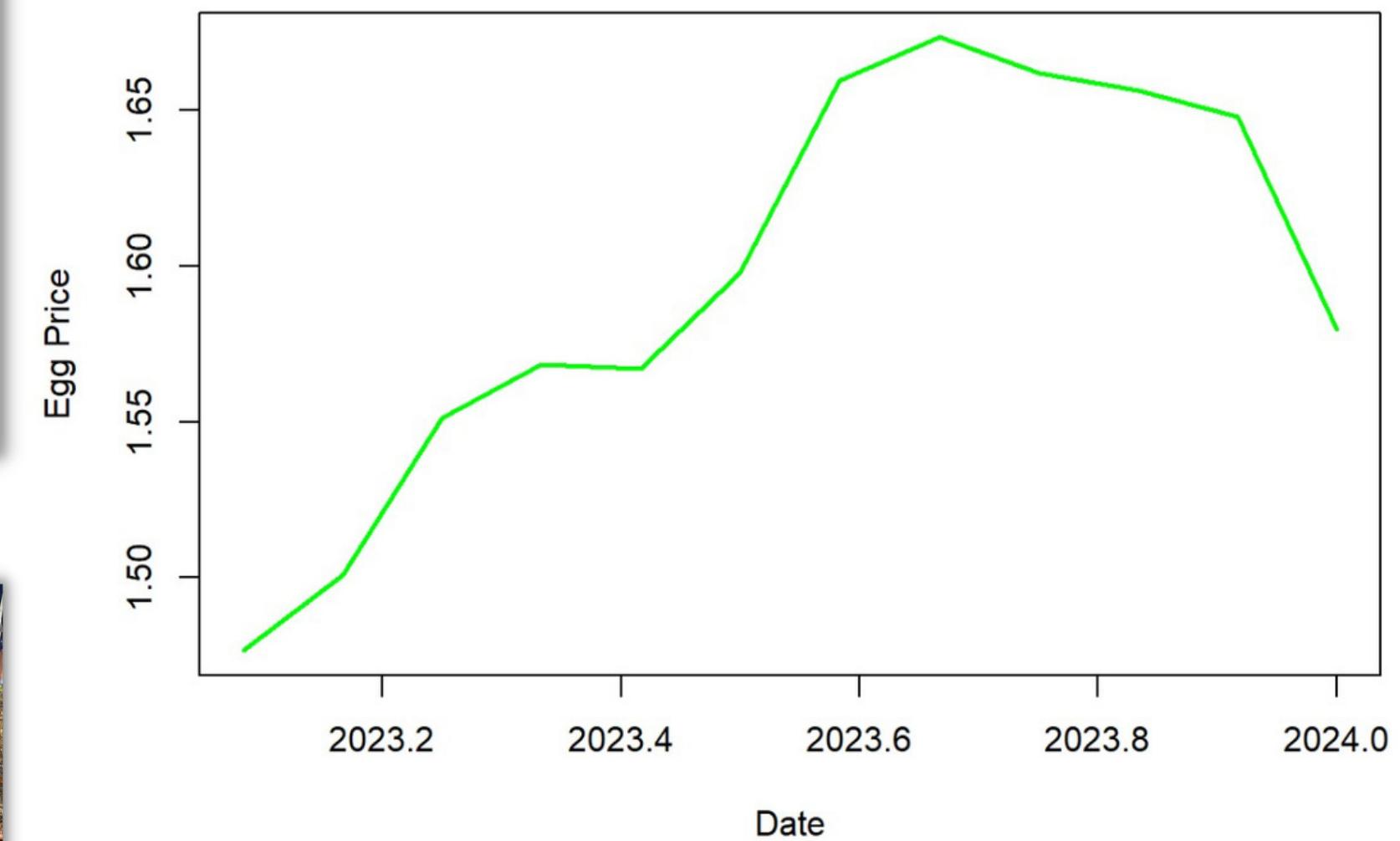
CHICKEN

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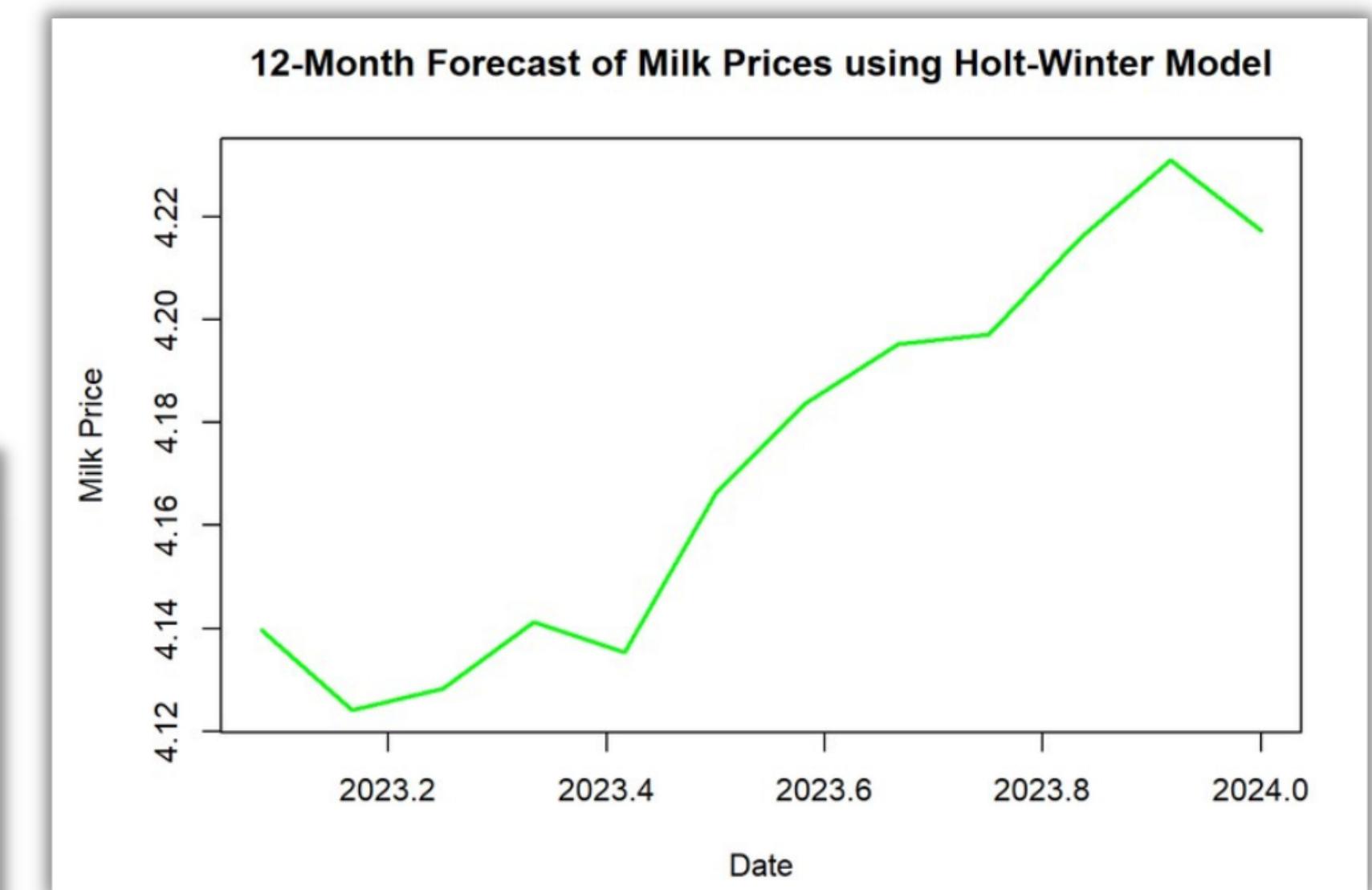
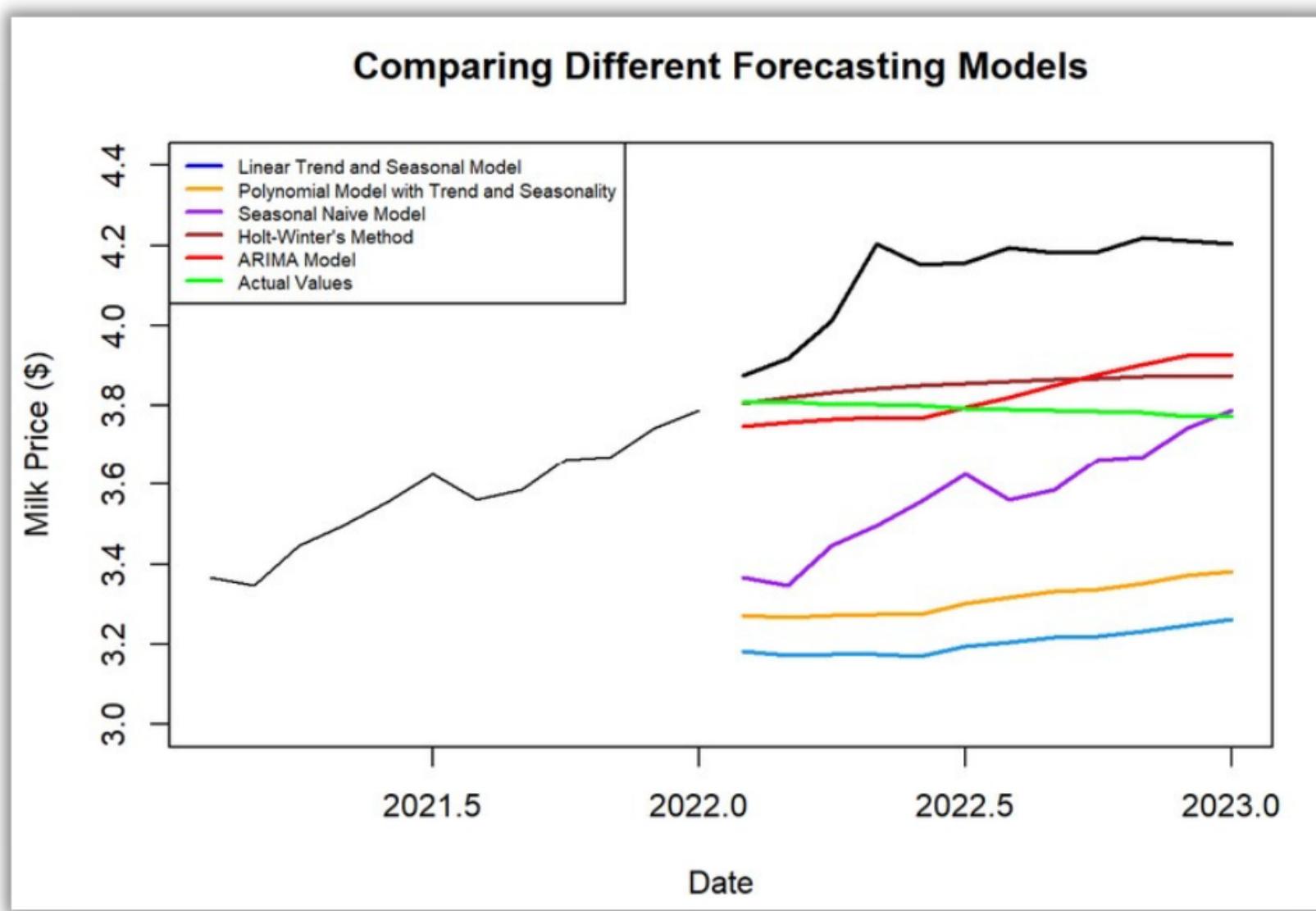
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### 12-Month Forecast of Egg Prices using Linear Regression Model



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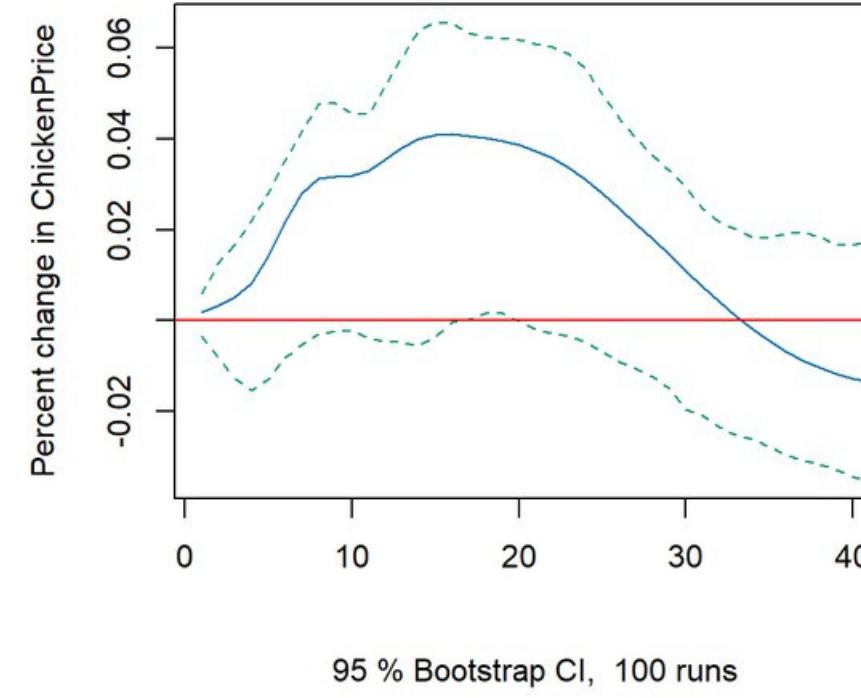
# MILK



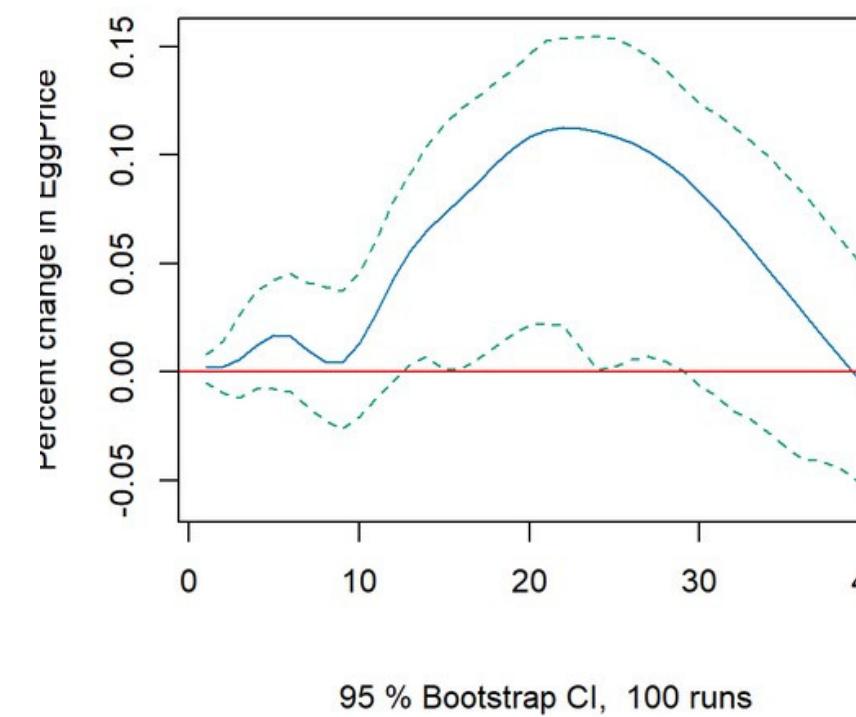
Forecasting Food Price Impact on Consumers

# Other Food's Response To Increase in FPI

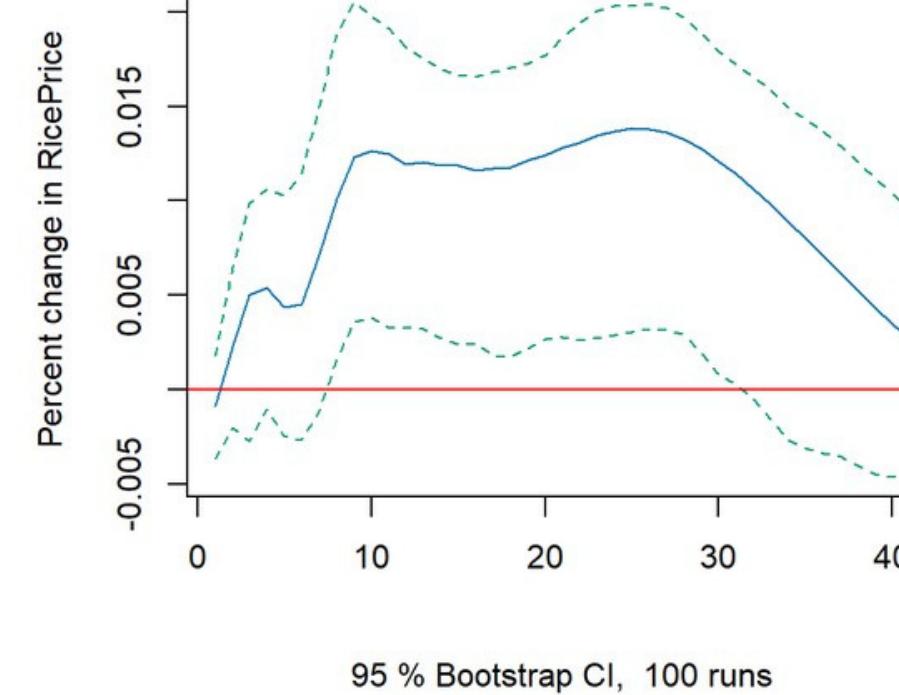
IRF of ChickenPrice to FoodPriceIndex



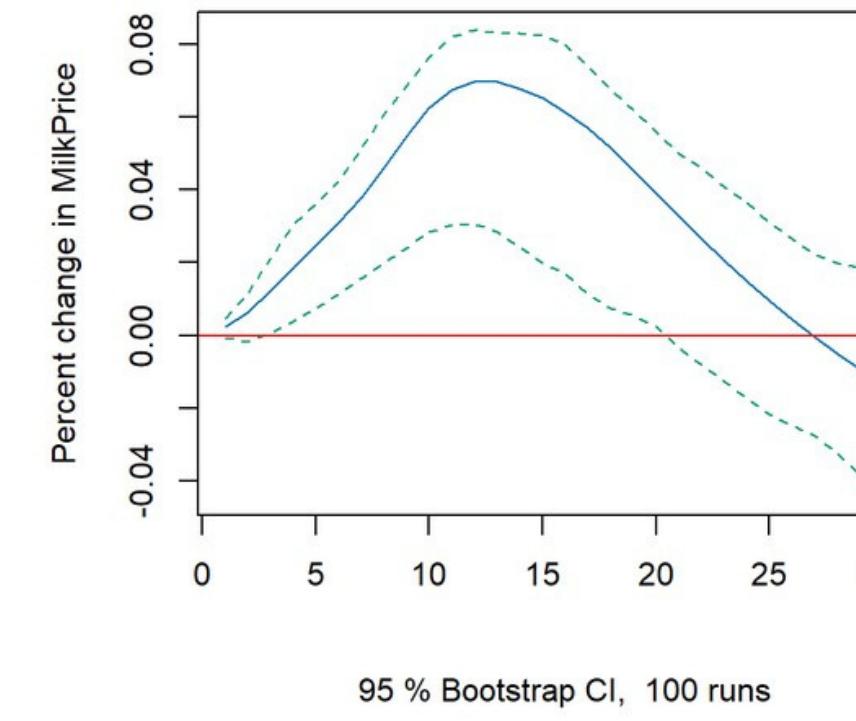
IRF of EggPrice to FoodPriceIndex



IRF of RicePrice to FoodPriceIndex



IRF of MilkPrice to FoodPriceIndex



When Food Price Index increase by 1 unit, prices for chicken, egg, rice and milk all have positive fluctuations.

Egg price is the most sensitive to FPI increase: When FPI increase by 1 unit, it can increase by 15% around 20 months later, then it goes back to normal growth.

Forecasting Food Price Impact on Consumers

# Recommendation for Policymakers

## Invest in food systems research and development:

- This can improve crop yields and promote the adoption of modern farming practices.



## Promote sustainable agriculture practices:

- Provide incentives for farmers to adopt sustainable practices to reduce production costs and improve the quality of food.

## Improve food labeling and transparency:

- Implement policies that require food labeling and increase transparency in the food supply chain.

## Manage trade policies:

- Policymakers can use tariffs and quotas to regulate the import and export of food, which can help stabilize domestic prices.

## Support small and mid-sized farms:

- Provide support such as funding for training and education, technical assistance, and marketing.

## Implement nutrition education programs:

- Invest in programs that promote healthy eating habits and help consumers make informed decisions about food.

## Provide food assistance programs:

- Food banks and SNAP can help low-income individuals and families access healthy and affordable food.

# Recommendation for Consumers

## Plan your meals and make a grocery list:

- This can help you avoid impulse purchases and prevent food waste.

## Buy in bulk:

- Purchasing staple items in bulk can help you save money in the long run.

## Shop around:

- Compare prices at different stores to find the best deals on the foods you need.

## Buy seasonal and local:

- Foods that are in season and grown locally are often less expensive than imported or out-of-season produce.

## Cook at home:

- Cooking at home allows you to control the ingredients and portion sizes, while also saving you money.

## Use coupons and rewards programs:

- Many grocery stores offer coupons and rewards programs that can help you save money on your purchases.



"IF FOOD PRICES KEEP GOING UP, WE MAY HAVE TO GET RID OF ONE OF THE CHILDREN!"

# Thank You, Questions?

